

ELECTRONIC SUPPORTING INFORMATION

Low-Temperature Synthesis of CdSe Nanocrystal Quantum Dots

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Low-Temperature Synthesis.

In a typical synthesis, precursor and growth solutions are prepared under inert gas atmosphere in the following way. Cadmium precursor: 0.4 mmol of cadmium acetate dihydrate (Aldrich) is dissolved in 1.2 mL oleic acid (Aldrich) and 11 mL octadecene at 130 °C; selenium precursor: 4.0 mmol of metallic selenium (Aldrich) is dissolved in 16 mL trioctylphosphine (TOP; Aldrich) and 1.8 mL toluene at room temperature; growth solution: fatty amine ligands (octylamine or octadecylamine) are dissolved in octadecene at 0.18-0.56 M concentration. 10 mL of the growth solution are then heated to a given temperature (50-130 °C) and equi-volume amounts (between 0.5 and 5 mL) of the cadmium and selenium precursor solutions are added simultaneously. The mixture is stirred at a given growth temperature until the NCs have reached the desired size. After cooling the mixture to room temperature, the NCQDs are isolated by extraction in methanol/hexanes (2:1) followed by precipitation from the hexanes layer with acetone. The CdSe NCQD precipitate readily redissolves in non-polar organic solvents.

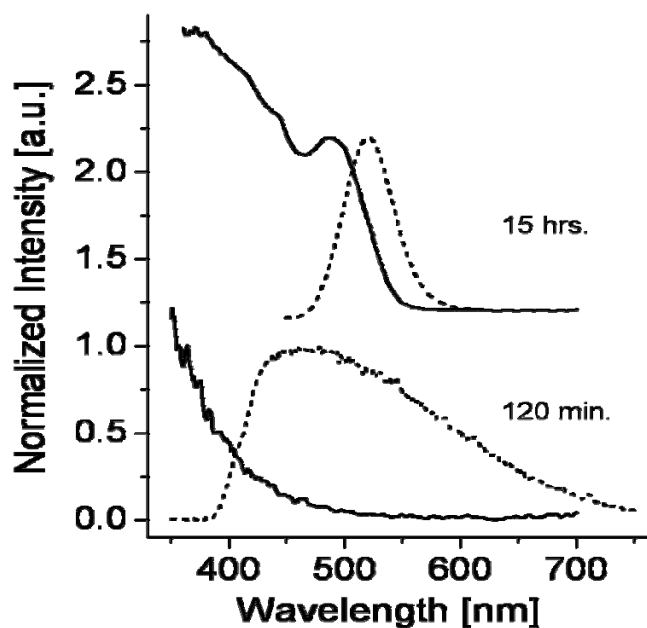


Fig. S1 UV-vis absorption (full lines) and photoluminescence emission (dotted lines) spectra, showing the temporal evolution of the CdSe nanocrystal nucleation and growth process at 130 °C. The nanocrystals were synthesized using **high reactant concentrations** similar to those utilized in high temperature routes. Four-fold less ODE solvent was used in this experiment compared to our normal synthesis route. The photoluminescence emission spectra were excited at 350 nm. All absorption and emission spectra were intensity-normalized for better comparison.

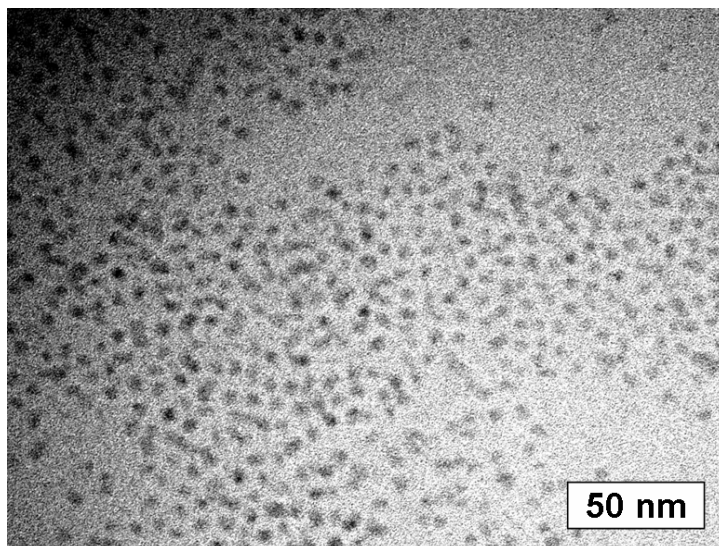


Fig. S2 Low-resolution TEM image of synthesized CdSe nanocrystal QDs at low temperature (corresponding to high-resolution images shown as Figure 2b in the manuscript).